ABSTRACT

Described herein is a process for objectively and automatically determining

spectral endmembers and transforming Spectral Mixture Analysis (SMA) from a widely

used research technique into a user-friendly tool that can support the needs of all types of

5   remote sensing. The process extracts endmembers from a spectral dataset using a

knowledge-based approach. The process identifies a series of starting spectra that are

consistent with a scene and its environment. The process then finds endmembers

iteratively, selecting each new endmember based on a combination of physically and

statistically-based tests. The tests combine spectral and spatial criteria and decision trees

10   to ensure that the resulting endmembers are physically representative of the scene.